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ART 34 AMDT

We claim:

1. The use of one or more enzymes selected from the group consisting of the enzymes tryptophan aminotransferase, indole-3-pyruvate decarboxylase and indole-3-acetaldehyde oxidase in a method for identifying compounds with herbicidal activity.
2. A method for identifying herbicidally active substances, comprising the following steps:
  - a) bringing one or more enzymes selected from the group consisting of the enzymes tryptophan aminotransferase, indole-3-pyruvate decarboxylase and indole-3-acetaldehyde oxidase into contact with one or more test substances under conditions which permit the binding of the test substance(s) to one of the abovementioned enzymes or to the nucleic acid sequence which encodes one of the abovementioned enzymes; and
  - b) detecting if the test substances reduce or block the transcription, translation or expression of at least one of the abovementioned enzymes; or
  - c) detecting whether the test substances reduce or block the activity of at least one of the abovementioned enzymes; or
  - d) detecting whether the test substance binds to one of the abovementioned enzymes.
3. A method as claimed in claim 1, wherein the test compound
  - a) is treated with a plant cell lysate which

comprises at least one of the enzymes  
tryptophan aminotransferase, indole-3-  
pyruvate decarboxylase and indole-3-  
acetaldehyde oxidase or

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b) with at least one of the enzymes tryptophan  
aminotransferase, indole-3-pyruvate  
decarboxylase and indole-3-acetaldehyde  
oxidase which are either partially or fully  
purified, and

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c) the enzymatic activity of at least one of the  
abovementioned enzymes is subsequently  
determined in comparison with the activity of  
at least one of the abovementioned enzymes  
which has/have not been treated with a test  
compound, those chemical compounds which  
reduce or block the activity of at least one  
of the abovementioned enzymes being selected.

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4. A method as claimed in claim 2 or 3, wherein  
tryptophan aminotransferase is employed as the  
enzyme.

25 5. A method as claimed in claim 2, wherein tryptophan  
or a tryptophan derivative is employed as  
substrate and the enzymatic activity in step (c)  
is determined via

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a) the decrease in L-tryptophan; or

b) the increase in indole-3-pyruvate; or

c) the increase in indole-3-acetaldehyde; or

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d) the increase in indole-3-acetic acid; or

e) the increase in indole-3-butyric acid; or

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a combination of at least two of the methods (a) to (e).

5 6. A method as claimed in claim 2, wherein indole-3-pyruvate or an indole-3-pyruvate derivative is employed as the substrate and the enzymatic activity in step (c) is determined via

10 a) the decrease in indole-3-pyruvate; or

b) the increase in indole-3-acetaldehyde; or

c) the increase in indole-3-acetic acid; or

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d) the increase in indole-3-butyric acid; or

e) a combination of at least two of the methods (a) to (d).

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7. A method as claimed in claim 2, wherein indole-3-acetaldehyde or an indole-3-acetaldehyde derivative is employed as the substrate and the enzymatic activity in step (c) is determined via

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a) the decrease in indole-3-acetaldehyde; or

b) the increase in indole-3-acetic acid; or

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c) a combination of methods a) and b).

8. A method as claimed in one of claims 2 to 7, wherein the enzymatic activity is determined spectroscopically.

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9. A method as claimed in any of claims 2 to 8, wherein the substances are identified in the form of a high-throughput-screening.

10. A method as claimed in any of claims 2 to 9,  
wherein the compound selected by means of the  
method is applied to a plant to verify the  
herbicidal activity.
11. A compound with herbicidal or growth-regulatory  
activity identified by means of one of the methods  
as claimed in claims 2 to 10.
12. Method of producing an agrochemical composition,  
which comprises
- i. identifying an active ingredient by means of  
one of the methods as claimed in claims 2 to  
10, and
- ii. formulating this active ingredient with  
auxiliaries which are suitable for the  
formulation of agrochemical compositions.
13. A method for controlling undesired vegetation  
and/or regulating the growth of plants, which  
comprises applying an effective amount of at least  
one compound as claimed in claim 11 or of an  
agrochemical composition obtainable by means of  
the method stated in claim 12 to plants, their  
environment and/or to seeds.
14. The use of a compound as claimed in claim 11 or of  
an agrochemical formulation obtainable by means of  
the method stated in claim 12 for controlling  
undesirable vegetation and/or for regulating the  
growth of plants as claimed in claim 13.